

Why is the the Littoral Combat Ship Required?

CSC 2004

Subject Area National Military Strategy

### ***Preface***

The purpose of this report is to validate the United States Navy's need for the Littoral Combat Ship to fulfill the Sea Power 21 naval strategy. The end of the Cold War shifted the maritime threat from the open-ocean to the littorals. Legacy warships designed for open-ocean operations are not well suited to operate in the littorals, thus the Navy must adjust its procurement to deal with emerging littoral threats.

The Navy envisions having to operate in the littorals for the foreseeable future. The littorals demand a warship that is suited to operate in that environment and deal with the mine warfare, diesel submarines, and small craft surface threat. The ability to deal with these threats will enable the Navy to carry out the Sea Power 21 naval strategy concepts of Sea Shield and Sea Strike. A number of options are available to meet the requirements of a littoral combatant. Each of these options will be analyzed to demonstrate their merit and determine which one meets the requirements of a Littoral Combat Ship.

I'd like to thank my faculty advisors, friends and family for their patience and help with this paper.

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## **EXECUTIVE SUMMARY**

**Title:** Why is the the Littoral Combat Ship Required?

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**Thesis:** The development and employment of the Littoral Combat Ship concept is essential for the success of the United States Navy's Sea Power 21 naval strategy.

**Discussion:**

Sea Power 21 is the Navy's strategy to organize, integrate, and transform the Navy to balance the force and meet the threat of the 21<sup>st</sup> century. This naval strategy is supported by three concepts, Sea Shield, Sea Strike, and Sea Basing, which are integrated together using the net-centric concept of ForceNet. To achieve the naval superiority outlined in the Sea Shield and Sea Strike concepts of the Sea Power 21 naval strategy, the Navy will require a Littoral Combat Ship. After the end of the Cold War the maritime threat changed from an open-ocean to a littoral-based threat. To deal with this new threat, the U.S. Navy has a number of littoral combatant procurement options available. Each option offers the Navy certain capabilities that are suited for operations in the littorals.

**Conclusion(s) or Recommendation:**

The Littoral Combat Ship offers the Navy the ability to fulfill the Sea Power 21 naval strategy. The Sa'ar V best fits the littoral combatant requirements as set forth in the U.S. Navy's Sea Power 21 naval strategy. Its ability to deal with threats in the littorals, low manning, shallow draft, relatively low cost of procurement, range, and the fact that the ship is already built in the United States set it apart from any other option available.

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“Innovation within the armed forces will rest on experimentation with new approaches to warfare, strengthening joint operations, exploiting U.S. intelligence advantages, and taking full advantage of science and technology.”

George Bush, National Security Strategy, October 2002

## I. Introduction

The development and employment of the Littoral Combat Ship concept is essential for the success of the United States Navy’s Sea Power 21 naval strategy. Sea Power 21 is the Navy’s strategy to organize, integrate, and transform the Navy to balance the force and meet the threat of the 21<sup>st</sup> century.<sup>1</sup> This naval strategy is supported by three concepts, Sea Shield, Sea Strike, and Sea Basing, which are integrated together using the net-centric concept of ForceNet.

The current capabilities envisioned for the Littoral Combat Ship concept will be addressed with the supporting argument of why the Navy must continue to invest in the Littoral Combat Ship to achieve the naval superiority outlined in the Sea Shield and Sea Strike concepts of the Sea Power 21 naval strategy.

Figure 1



Source: “Sea Power 21,” October 2002, 2.

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<sup>1</sup> Vern Clark, “Sea Power 21,” October 2002, 2.

The Sea Power 21 naval strategy is designed to counter regional and transnational threats by expanding striking power, achieving information dominance, and developing transformational ways to fulfill missions such as power projection, strategic deterrence, strategic sealift, and forward presence.<sup>2</sup> To achieve this goal, the Sea Power 21 naval strategy requires the Navy to increase the current size of its force from 115 to an end-strength of 160 surface warships.<sup>3</sup> Subsequently, it is essential the Navy invest in the Littoral Combat Ship in order to increase naval combat power by 30 to 60 warships, achieve its desired end strength, and fulfill the requirements defined by the Sea Shield and Sea Strike concepts.

The concepts of Sea Shield and Sea Strike provide the operational foundations for the Littoral Combat Ship. Sea Shield provides for the defense of national assets via control of the seas, forward presence, and networked intelligence.<sup>4</sup> The Littoral Combat Ship is a component of the Sea Shield concept that provides for fleet defense by employing multiple sensors to keep potential enemies from using the littorals to their advantage. The Sea Power 21 naval strategy and the Littoral Combat Ship must successfully integrate into joint operations both today and in the future. Current joint doctrine defines the littoral mission:

The littoral area contains two parts. First is the seaward area from the open ocean to the shore, which must be controlled to support operations ashore. Second is the landward area inland from the shore that can be supported and defended directly from the sea. Control of the littoral area is often essential to dimensional superiority. Naval operations in the littoral can provide for the seizure of an adversary's port, naval base, or coastal air base to allow entry of other elements of the joint force.<sup>5</sup> Figure 2 provides a view of the littorals.

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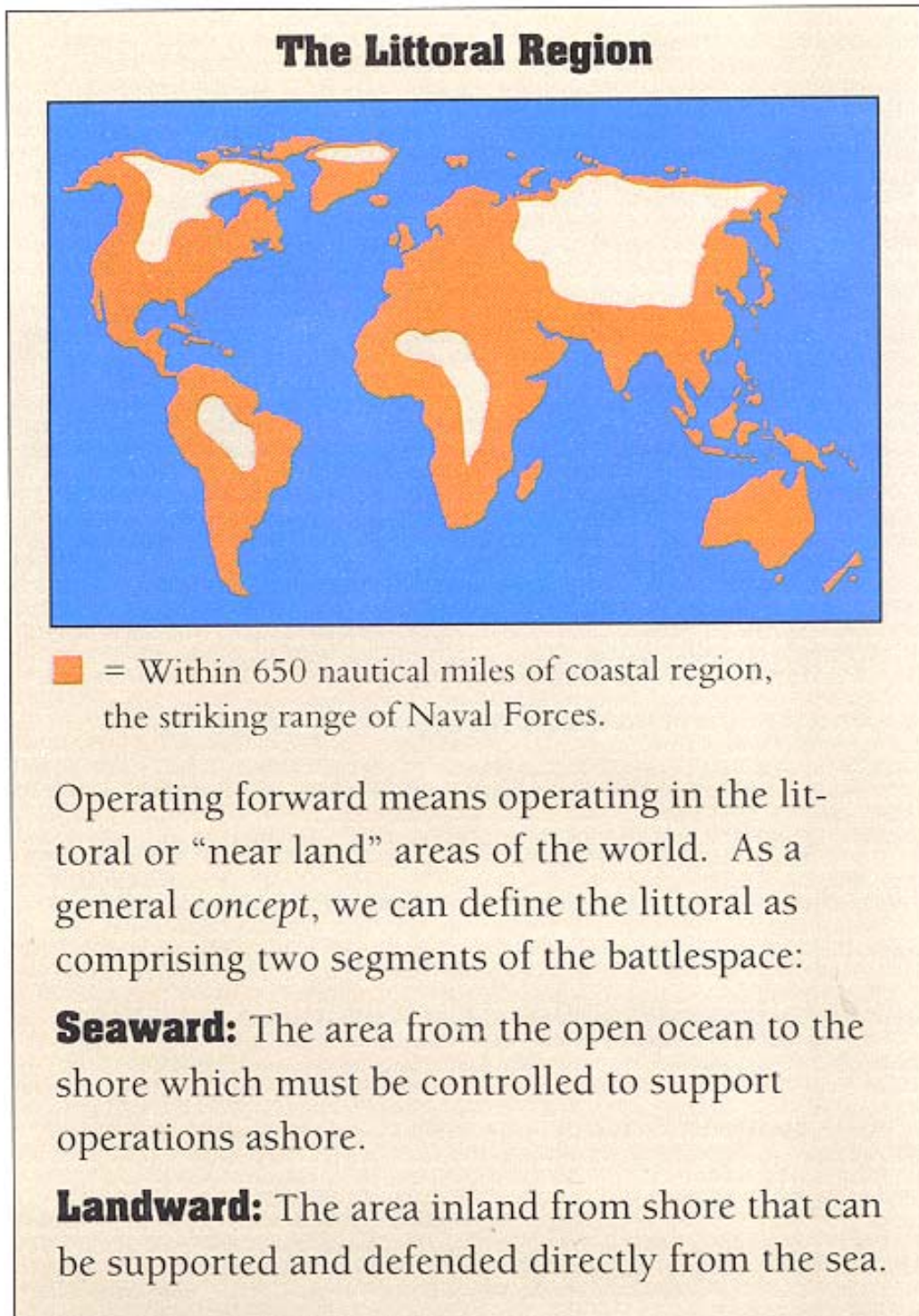
<sup>2</sup> Clark, 2.

<sup>3</sup> Clark, 9-10.

<sup>4</sup> Clark, 5.

<sup>5</sup> Joint Doctrine Encyclopedia, 16 July 1997, 464.

Figure 2



Source: “...From The Sea,” May 1992, 6.

The Littoral Combat Ship will provide the necessary flexibility and integration into joint operations for Regional Combatant Commanders and Joint Force Commanders to employ multifunctional assets to meet the threat and accomplish missions within the littorals. This capability, coupled with the Sea Strike and Sea Shield concepts, provides Regional Combatant Commanders with the ability to engage in multiple actions within their areas of responsibility, thus achieving the national objectives outlined in the National Security Strategy.

Sea Strike provides for direct, decisive, and sustained influence in Joint campaigns.<sup>6</sup> The Navy needs to project offensive firepower deep inland without the benefit of a ground footprint from which to strike. To project this firepower inland as deeply as possible, the Navy needs to operate in the littorals rather than the deep water, open-ocean. Current naval trends indicate that numerous countries are investing time, money, and effort in area-denial capabilities within their littoral areas. The focused capabilities of potential U.S. adversaries include submarines, surface-to-surface missile batteries, mines, and small surface crafts. One can only assume that potential adversaries will focus their strategy against the presumed American weaknesses.

To counter this potential threat, the Navy must develop and employ the Littoral Combat Ship. The Littoral Combat Ship will provide the Regional Combatant Commander and Joint Force Commander three focused mission area capabilities which are the foundation for the Sea Shield concept; 1) enhanced mine warfare capability, 2) better shallow-water Anti-Submarine Warfare (ASW) capability, and 3) an effective counter to small craft surface threats. The Littoral Combat Ship will also have other

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<sup>6</sup> Clark, 3.

inherent capabilities that support other missions such as; Maritime Interdiction Operations (MIO) and Intelligence, Surveillance, and Reconnaissance (ISR). These tactical level capabilities will provide earlier identification of threats and at the operational level can enhance the Regional Combatant Commanders engagement strategy by increasing the number of naval assets available to perform tasks specified in the Universal Navy Task List, Enclosure 1. In addition to being a focused mission ship, the Littoral Combat Ship will enable the accomplishment of other missions such as ballistic missile defense (Sea Shield) or precision strike (Sea Strike) by multi-mission surface combatants.<sup>7</sup>

To achieve the effects envisioned in Sea Power 21, Sea Shield and Sea Strike concepts, the Navy's Global Concept of Operations may require an increase in force structure to 160 surface warships. In a time of challenging fiscal constraints and the desire to balance the force to achieve the right mixture of innovative concepts, the Littoral Combat Ship provides a relatively inexpensive option and a much needed alternative to achieve the correct force structure necessary to meet the challenges outlined in the Sea Power 21 strategy.

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<sup>7</sup> "Littoral Combat Ship Flight 0 Preliminary Design Interim Requirements Document (PD-IRD)," 10 February 2003, 2-3.

## I. Background

*Changing maritime focus:*

“Before hostile armies or fleets are brought into contact...there are a number of questions to be decided, covering the whole plan of operations throughout the theatre of war.”<sup>8</sup>

Alfred T. Mahan believed that command of the sea could only be gained by a nation that was strong enough to control centers of commerce. To gain control of those centers of commerce, a nation's navy had to be strong enough to engage and decisively defeat an opposing navy.<sup>9</sup> In the early 1900's, the British, German, Japanese, and American Navies believed that naval strength was based on the number of heavy warships that they possessed. The 1921 Washington Naval Conference, which set a ratio of tonnage for capital ships between the major naval powers, confirmed this emphasis.<sup>10</sup> Prior to World War II, the crown jewels of a naval fleet were the battleships. After Pearl Harbor aircraft and aircraft carriers became the dominant naval platforms. The primary objective of these warships was the pursuit of a major and decisive fleet engagement, in accordance with Mahan's strategic theory.

Once a nation established command of the sea, it would then be able to establish forward bases, which would allow the Navy to move its operating bases further forward and closer to the enemy. To Mahan, other functions of the Navy such as commerce

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<sup>8</sup> Alfred T. Mahan, The Influence of Sea Power Upon History 1660-1783 (New York: Dover Publications, Inc., 1987), 8.

<sup>9</sup> Mahan, 539-540.

<sup>10</sup> Thomas H. Buckley, “The Icarus Factor: the American Pursuit of Myth in Naval Arms Control, 1921-1936,” The Washington Conference 1921-22 Naval Rivalry, East Asian Stability and the Road to Pearl Harbor, ed. Erik Goldstein and John Maurer. (Portland, OR: Frank Cass, 1944), 131.

destruction or prevention, was something that could be pursued during times of war but only as a secondary objective.<sup>11</sup>

“The object of naval warfare must always be directly or indirectly to secure the command of the sea or to prevent the enemy from securing it.”<sup>12</sup>

Sir Julian S. Corbett differed from Mahan on a number of issues. For example, to Corbett “command of the sea” was a goal that could not be achieved. To Corbett, command of the sea was more about the control of maritime communications and commerce prevention, neither of which is absolute.<sup>13</sup> Corbett did not place an emphasis on heavy warships such as the battleships or the aircraft carriers. He instead stated that “the classes of ships which constitute a fleet are, ought to be, the expression in material of the strategical and tactical ideas that prevail at any given time, and consequently they have varied not only with the ideas, but also with the material in vogue.”<sup>14</sup>

While Mahan called for a large fleet (of larger warships) to engage in a decisive action, Corbett called for a fleet suited for the task at hand with a primary goal of allowing friendly commerce to flow while interdicting enemy commerce. The debate over the primary role of the Navy shapes maritime strategy and the future composition of the U.S. Navy. The exact size and number of warships has been an issue of debate in the American Navy since its birth. At one end of the spectrum are those that argue for fewer, more heavily armed and complex warships. At the other end of the spectrum are those that argue the exact opposite arguing for more warships that are lighter and less complex. In the middle ground are those that try to balance both extremes and their proposals have

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<sup>11</sup> Mahan, 539.

<sup>12</sup> Julian S. Corbett, Some Principles of Maritime Strategy, ed. John B. Hattendorf and Wayne P. Hughes (Annapolis, MD: Naval Institute Press, 1988), 91.

<sup>13</sup> Corbett, 94-95.

<sup>14</sup> Corbett, 107.

come to be known as the High-Low Mix.<sup>15</sup> Small warships have been functionally used in the past for local sea control, seizure or defense of advanced naval bases, protecting sealift, and to provide direct support of land operations.

*Historical efforts:*

The following four examples provide the U.S. Navy with lessons learned on how to combine various sized small warships into cohesive fleets that fulfill the functions of the Navy; 1) the Jeffersonian gunboat navy, 2) Motor Torpedo Boats (PT Boats) of WWII, 3) Patrol-Combatant-Missile (Hydrofoil) or PHM's of the 1980's, and 4) Patrol Coastal (PC) boats of the 1990's. These examples provide guidance for current discussions dealing with the procurement of the Littoral Combat Ship that is designed to be small, shallow draft, and with the endurance to operate away from United States coastal waters.

The Jeffersonian Gunboat Navy. Thomas Jefferson (1801-1809) did not favor the construction of large ships of the line or frigates because of the financial issues that were facing the young American Republic. The cost of manning and maintaining large ships was more than could be paid for by the national treasury.<sup>16</sup> Jefferson and his administration began building small gunboats that numbered 257 by 1807, with the mission of protecting the major waterways and harbors.<sup>17</sup> The function of Jefferson's Navy was one of coastal defense. Land artillery and mobile artillery (on the gunboats)

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<sup>15</sup> Elmo R. Zumwalt, Jr. On Watch (New York: Quadrangle, 1976), 72.

<sup>16</sup> Spencer C. Tucker, The Jeffersonian Gunboat Navy (Columbia: University of South Carolina Press, 1993), 18.

<sup>17</sup> Tucker, 29.



would be massed wherever an American port was threatened.<sup>18</sup> To reduce operating costs, six American frigates purchased and built during George Washington's Presidency were placed in ordinary (lay-up) at the start of Jefferson's administration.<sup>19</sup> These vessels would be re-activated if the nation went to war.

Just as Jefferson entered office, international tensions forced him to reevaluate naval requirements. From June 1801-1805, the U.S. Navy fought the Tripolitan War. This war was fought in the Mediterranean Sea, far from America's coast. To adjust to this new threat, the naval strategy and force balance had to be changed. In order to meet this new requirement, the U.S. Congress authorized the commissioning of 13 frigates for national defense. Three of the lay-up frigates were restored to active duty and were immediately sent to the Mediterranean. The remaining lay-up frigates needed time for repairs and did not have their required manning. Construction was also started on the remaining seven frigates.

After arriving in the Mediterranean, the American navy recognized the need for shallow draft vessels (gunboats) to close the shoreline and intercept the small galleys used by the Tripolitan's. These galleys used shallow coastal waters to evade and run away from the American frigates that because of their draft could not pursue them for fear of grounding.<sup>20</sup> This fear was validated in 1803 when the USS Philadelphia ran aground and was captured by the Tripolitans.<sup>21</sup> Local vessels were purchased and armed to prevent Tripolitan galleys from using the shallow coastal waters to their advantage.

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<sup>18</sup> Tucker, 24.

<sup>19</sup> Tucker, 12.

<sup>20</sup> Tucker, 14.

<sup>21</sup> E.B. Potter, ed. Sea Power: A Naval History (Annapolis, MD: Naval Institute Press, 1987), 91.

The small size of the ships limited their sea state capability and made for challenging off-shore or transatlantic voyages. Nine American gunboats were sent from the United States to the Mediterranean with limited success. While none saw combat, one was lost at sea, some lost personnel to desertion, and some crewmembers believed they were simply lucky to have completed the transatlantic crossing.<sup>22</sup>

The War of 1812 finally provided the gunboats the opportunity for the action they were designed for. Although the gunboats had a shallow draft, they were nonetheless still dependent upon the wind for their maneuverability (just as the larger warships they encountered). Due to inadequate communications, the gunboats were never massed in large enough numbers to threaten a larger rival and, even when a group of three to four vessels attacked a larger warship, they were heavily outgunned. Most gunboats only carried one to two small caliber guns of which the largest size was a 32-pounder.<sup>23</sup> More debilitating than anything else was the fact that when American frigates were called back into service, the gunboat manning was decreased to provide trained manpower for the frigates authorized by Congress.<sup>24</sup> During the war of 1812, gunboats were relegated to the role of; 1) transportation for men, ordnance, and supplies, 2) tows for larger ships, 3) hospital ships, 4) lighters, 5) pilot vessels, 6) places of confinement, 7) store ships, and 8) convoy escorts, none of which were missions they were designed and built for.<sup>25</sup> The gunboats poor performance and changing priorities by President James Madison's Secretary of the Navy, Paul Hamilton, who favored a strong Navy made up of larger

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<sup>22</sup> Tucker, 78.

<sup>23</sup> Tucker, 36-37.

<sup>24</sup> Tucker, 104.

<sup>25</sup> Tucker, 108.

ships, doomed the gunboats.<sup>26</sup> The War of 1812 demonstrated the need for larger ships to protect American commerce in the high seas and defend the nation against a European powers.

Motor Torpedo Boats (PT Boats) of WW II. The Navy of World War II consisted of a ratio of large to intermediate to small combatants of 1:9:90.<sup>27</sup> At the large end were the Aircraft Carriers and Battleships while at the low end were the corvettes, patrol coastal and PT boats. PT Boats were used to support amphibious operations, drop agents in enemy held territory, and most importantly to interdict military and merchant shipping in coastal waters or narrow straits.<sup>28</sup>

Germany and Italy used an assortment of small crafts to supply North Africa and Sicily. These craft operated close to shore and at night to escape detection from larger Allied ships and aircraft. The Japanese also used a number of small crafts to resupply their numerous outposts in the Pacific. PT Boats, because of their size, draft, and armament, were able to operate close to shore to enable Allied operations or otherwise block enemy shallow water resupply avenues.

The size of the PT Boats prevented them from being able to make ocean voyages. Instead, they were transported to their area of operations in larger ships. Because of their size, the PT Boats also depended on a “mother ship” or tender to provide them with crew comforts and a re-supply of weapons and fuel. The lack of heavy weapons, unreliability of the MK 8 torpedoes, and lack of an adequate air defense capability forced PT Boats to

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<sup>26</sup> Tucker, 33.

<sup>27</sup> Center for Strategic and Budgetary Assessments (CSBA), “Naval Transformation and the Littoral Combat Ship,” 25 February 2004, slide #13.

<sup>28</sup> Curtis L. Nelson, Hunters in the Shallows, A History of the PT Boat, (Washington D.C.: Brassey’s, 1998), 201.

operate at night where their small size made them hard to detect in an era where radar was just beginning to be used and night aviation was in its infancy.<sup>29</sup>

The MK 8 torpedo, with its slow speed, small warhead, and erratic run to the target, drastically reduced the effectiveness of the PT Boats.<sup>30</sup> This lack of effectiveness was demonstrated by the fact that during WW II, the U.S. Navy reported that in 14 PT Boat engagements, 111 torpedoes were fired, damaging or destroying one heavy cruiser, two light cruisers, 19 destroyers, and one submarine. However, post war investigations revealed only one destroyer was damaged with one submarine and one destroyer confirmed as sunk.<sup>31</sup> At the conclusion of W.W. II the U.S. Navy scrapped the PT Boats. The drawdown in military forces and a shift in naval strategy to open-ocean warfare against the Soviet threat made them expendable.

Patrol-Combatant-Missile (Hydrofoil) or PHM. In the 1970's, the United States and her North Atlantic Treaty Organization (NATO) allies tried to develop small, high speed, lethal warships. Germany, Italy, and the United States attempted to develop these warships to counter Soviet designs and exports capable of firing what were then very capable missiles such as the Soviet Styx. For example, in 1967 a veteran Israeli ship, the Eilat, was attacked and sunk by four Styx missiles fired from Egypt's Port Said Harbor.<sup>32</sup> By the mid 1970's, only the United States proceeded along with the development of the PHM's but support for the PHM's was precarious at best. In 1975, after PHM-1 was

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<sup>29</sup> Nelson, 2-3.

<sup>30</sup> Nelson, 161.

<sup>31</sup> Nelson, 161.

<sup>32</sup> Malcolm Muir, Jr. Black Shoes and Blue Water-Surface Warfare in the United States Navy, 1945-1975 (Washington: Naval Historical Center, Department of the Navy, 1996), 168-169.

tested, the program was cancelled. Through heavy Congressional pressure the program was reinstated in 1977 and was again cancelled after the first six ships were built.<sup>33</sup>

PHM's, like the PT Boats of W.W. II, could operate close to shore where they were harder to detect. Like the PT Boats, PHM's could also make quick attacks against larger warships using the newly developed Harpoon surface-to-surface missiles and for smaller threats or air defense, the PHM's were armed with a 76 MM Otto Malera gun mount. Despite offering an excellent warship for area denial, PHM's suffered from some serious drawbacks. PHM maintenance standards mirrored aircraft readiness levels, at high speeds, the vessels consumed large amounts of fuel and living conditions for the crew were not conducive to long underway periods. All of these areas posed an enormous resource challenge for the Navy during a time of fleet reductions. For a Navy centered on the open-ocean threat that the former Soviet Union represented, the PHM's with their limited range and lack of adequate air defense could not be justified. It is ironic that in the early 1990's, as the threat changed from an open-ocean to the littorals where speed and a shallow draft is important, the PHM's were decommissioned.<sup>34</sup>

Patrol Coastal's (PC's). Naval Special Warfare procured PC's to be used by Navy SEALs to deploy SEAL teams close to shore. Their large size and limited capability made them expendable, especially when compared to a MK 5 boat that can carry the same number of personnel and can be deployed to a different theater of operations by aircraft. The Navy has tried to divest itself of these boats by offering them to the U.S. Coast Guard for the homeland security of U.S. harbors. September 11, 2001

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<sup>33</sup> Anthony J. Watts. Fast Attack Craft, (New York: Sterling Publishing Co. Inc., 1992), 35.

<sup>34</sup> A.D. Baker III. Naval Institute Guide to Combat Fleets of the World 1995 – Their Ships, Aircraft, and Armament, (Annapolis, MD: Naval Institute Press, 1995), 886.

and Operation Iraqi Freedom (OIF) gave the PC's a temporary lease on life as they were utilized to escort major warships in and out of U.S. and foreign harbors. Although the Navy has identified a need for ships that are capable of operating in the littorals, the PC's are not the answer. A ship with a crew of 28 people with limited firepower, consisting of crew served weapons, does not offer any advantages in the littorals.<sup>35</sup> The limited firepower and lack of a clearly defined mission has limited the use of the PC's and will ultimately lead to the removal of this capability from the fleet. The former USS Cyclone (PC 1) has already been transferred to the Philippine Navy.<sup>36</sup>

#### *Global War on Terrorism and Sea Power 21:*

To continue to support and remain a formidable force in the Global War on Terrorism (GWOT), the U.S. Navy is facing a number of issues as it determines the composition and size of its surface warship fleet to support Sea Power 21 Naval Strategy. To better understand the challenge the Navy faces, a look into the past provides a clear understanding of the similar strategic and littoral warfare issues that the Navy must overcome to stay ahead of changing environments and developing threats. Key amongst those issues are; an aging fleet, a budget that may not allow room for growth, a changing threat, and a changing maritime focus. These issues could be resolved by examining the functions of the Navy and historical efforts that provide a greater number of smaller warships (littoral combatants) in the naval inventory.

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<sup>35</sup> "United States Navy Fact File: Patrol Coastal Ships – PC." 21 October 2002. <<http://www.chinfo.navy.mil/navpalib/factfile/ships/ship-pc.html>> (1 Feb 2004).

<sup>36</sup> A.D. Baker III, "World Navies are in Decline," Proceedings, March 2004, 47.

Mahan's writings have been interpreted by nations as a call for building strong navies composed of larger warships. The large naval build ups with an emphasis on larger and heavier battleships by the British, German, Japanese and American navies in the early 1900's were due in part to Mahan's influence. To Mahan the possession of that large fleet was key since it allowed a navy to pursue its primary objective, the destruction of the enemy fleet. Commerce destruction or prevention was something that could be pursued during times of war but only as a secondary objective.<sup>37</sup>

To Corbett, the purpose of a navy is not solely to engage another navy in a major encounter. The navy must also be able to control the ocean supply lines to its army and when required, the navy must be able to interdict the ocean supply lines of the enemy. Control of the sea will always be relative since a navy cannot be everywhere all the time. The key to control is in selecting that which a navy can truly influence.

If command of the sea is really more about control of the sea, the next logical question asked by Corbett was, what should the composition of the fleet be? To this, he responded that "the classes of ships which constitute a fleet are, ought to be, the expression in material of the strategical and tactical ideas that prevail at any given time, and consequently they have varied not only with the ideas, but also with the material in vogue."<sup>38</sup> His definition is very broad but at a minimum, it appears that Corbett agreed with Admiral of the Fleet George Anson's definition that command of the sea was based on battleships with cruisers serving as the eyes of the fleet.<sup>39</sup> From examples provided by Corbett in his writings, it is clear that the battleships he described do not necessarily

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<sup>37</sup> Mahan, 539.

<sup>38</sup> Corbett, 107.

<sup>39</sup> Corbett, 112.

mean the battleships of World War II. Battleships are the ships that bring the most power to a naval fight. They are the ships capable of tilting the outcome of a naval battle and the American aircraft carriers and Aegis class cruisers can be considered modern day battleships because of their offensive strike and fleet defense capabilities.

Control of the sea offers a nation the ability to use its naval power to pursue its international political goals without having to utilize all of its resources. “A war may be limited not only because the importance of the object is too limited to call forth the whole national force, but also because the sea may be made to present an insuperable physical obstacle to the whole national force being brought to bear.”<sup>40</sup> Therefore, unlike other sources of power, the use of a nation’s naval power can be incremental and could eventually involve its greatest source of strength, its battleships.

The primary difference between Mahan and Corbett is in how they view the use of the navy. Command of the sea is quite different than control of the sea and each requires a different fleet makeup. Sea Power 21 tries to balance both theories into one coherent strategy. The Global War on Terrorism requires the U.S. Navy to be dispersed to deal with threats around the world. The firepower of American aircraft carriers, cruisers, and destroyers can only be utilized if terrorist fight conventionally which they are unlikely to do against superior firepower. For the U.S. Navy to achieve its naval strategy it must deal with a set of current and pressing issues.

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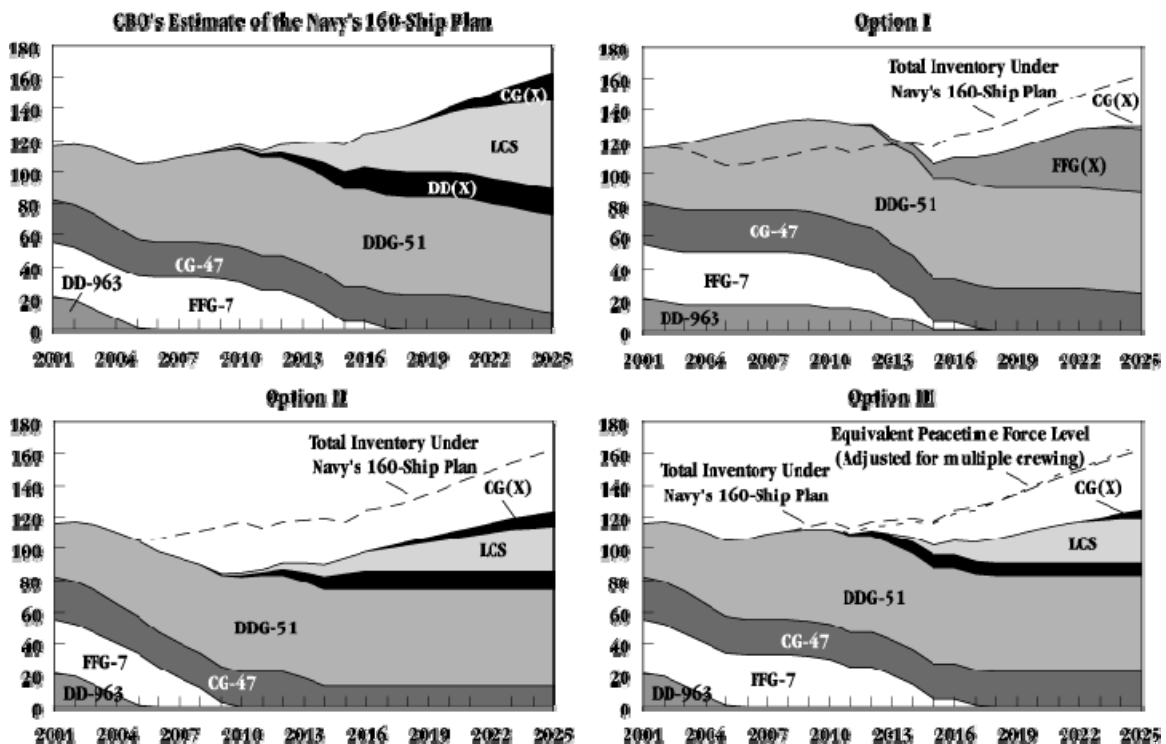
<sup>40</sup> Corbett, 59.



*Congressional Budget Office Options:*

The Congressional Budget Office (CBO) published a report in 2003 outlining three possible options to determine the number and composition of naval warships.<sup>41</sup> Two of the CBO report options provided for the procurement of Littoral Combat Ships. Although the CBO report acknowledges the Navy's requirement for 160 warships, the options it provided did not meet the Navy's requirements. Figure 3, below, illustrates the three CBO options:

Figure 3



Source: "Transforming the Navy's Surface Combatant Force," CBO, 7 April 2003, Figure 1.

<sup>41</sup> Congressional Budget Office, "Transforming the Navy's Surface Combatant Force," 7 April 2003, Figure 1.

Option I – Provides for a delay of the transition to the next generation of ships by making the most of the existing fleet, this would involve maintaining Spruance Class destroyers and Oliver Hazard Perry class frigates longer than the Navy had anticipated.

An advantage of this option is that in the end, the overall number of ships in the Navy would be higher than option II or III. Although existing platforms have a number of maintenance and operational issues, these issues could be budgeted for repair or a decision could be made to leave those issues alone in anticipation of the ships decommissioning.

One disadvantage of this option includes not reaching the Navy's requirement of 160 warships. These warships would also be at risk to threats they were not designed for, unless their weapons systems were upgraded. Keeping these warships in service longer would also prevent the navy from reducing its manpower related costs and freeing resources for research and development of future systems. Lastly, this option does not offer procurement of the Littoral Combat Ship, which is required to fulfill the Sea Power 21 naval strategy and deal with the littoral threat.

Option II – Accelerates the transition to the next generation of ships by retiring much of the existing force. Under this plan the Spruance Class destroyers and Oliver Hazard Perry class frigates would be decommissioned early.

The advantage of this option is that it allows the Navy to maintain and procure the classes of warships it requires to meet the Sea Power 21 naval strategy. Financially, the Navy would save money as older and more maintenance intensive ships are decommissioned. In addition, manpower related cost savings would free resources for research and development of future systems.

The disadvantages of this option include risks associated with having the overall number of ships dip to 80-100 ships around 2009. In addition, the overall number of ships in service offered by option II is less than that of option I. Lastly, this option does not offer procurement of the 160 ships required by the Navy to fulfill the Sea Power 21 naval strategy.

Option III – Requires the Navy to buy fewer next generation ships by assigning multiple crews to new ship classes. No documentation can be found demonstrating naval support of this option, however, the Navy has experimented with rotational crews on current ships that allow that ship to remain on station longer.

The advantage of this option is that it allows the Navy to maintain and procure the classes of warships it requires to meet the Sea Power 21 naval strategy. This option keeps a steady number of ships in service with no significant dip in numbers, such as those found in option II. Financially, the Navy would gradually save money as older and more maintenance intensive ships are decommissioned. Gradual manpower related cost savings would free resources for research and development of future systems. Lastly, operational costs related with the movement and preparation of ships for deployment could provide additional savings of resources.

The disadvantages of this option include the fact that although it provides for procurement of the Littoral Combat Ship, the first ship would not enter service until 2013-2014. The overall number of ships in service offered by option III is also less than that of option I. In addition, the exact wear and tear on the ship as a result of extended underway deployments would need to be evaluated to ensure the ships are not

prematurely fatigued. Lastly, this option does not offer procurement of the 160 ships required by the Navy to fulfill the Sea Power 21 naval strategy.

## **II. Options**

As demonstrated in past attempts to balance naval strategy and force levels, Sea Power 21 and the Littoral Combat Ship pose the same challenges in today's Navy to design a force to meet the current strategic needs and threats. Three options are available for consideration by the Navy to procure a Littoral Combat Ship in sufficient numbers to achieve the desired end state of a surface force of 160 vice 115 warships. The Littoral Combat Ship will meet threats and transform the current size of the fleet to support the Sea Power 21 naval strategy. These options include: 1) acquire a foreign class of warship that meets the functions-based needs of the Littoral Combat Ship, 2) invest in additional Arleigh Burke type destroyers to meet the Littoral Combat Ship requirement, and 3) acquire a new Littoral Combat Ship as called for by U.S. Navy specifications. In a time of challenging fiscal constraints and the desire to balance the force to achieve the right mixture of innovative concepts, the Littoral Combat Ship provides a relatively inexpensive option and a much needed alternative to achieve the correct force structure necessary to meet the challenges outlined in the Sea Power 21 strategy.

### *Acquire a Foreign Class:*

American Allies are already producing their version of a Littoral Combat Ship. Sweden has manufactured the Visby class corvette.<sup>42</sup> Norway has manufactured the

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<sup>42</sup> "Visby Class Corvette: The True Stealth Vessel."  
<<http://www.kockums.se/SurfaceVessels/visby.html>> (12 December 2003).

Skjold class missile fast patrol boat.<sup>43</sup> A U.S. shipyard manufactures the Sa'ar 5 class corvette for Israel.<sup>44</sup> All vessels have some of the design features, which the Sea Power 21 and the PD-IRD call for in a Littoral Combat Ship. Their characteristics include:

	Length (ft)	Beam (ft)	Draft (ft)	Displacement (tons)	Speed (knots)	Range (nautical miles)	Crew	Cost (U.S. Dollars)
Visby	239	34	8	600	+35	2300	43	200 million
Skjold	154	44	3-10	260	+55	800	15	50 million
Sa'ar 5	281	39	10	1227	33	4000	61	+200 million

Obviously research would need to be conducted to determine other characteristics such as their ability to deal with rough weather, damage control, and underway replenishments.

The three vessels have capabilities that are suited for defeating the mine warfare, shallow water anti-submarine, and small craft threat in the littorals. A cost-benefit analysis would need to be conducted to determine if required capabilities can be added. Their current capabilities include:

	Gun	Surface to Surface Missile	Surface to Air Missile	Torpedoes	Helicopter
Visby	57 mm	8 RBS 15	Evolved Sea Sparrow	Tp 45	Agusta Westland A109M
Skjold	76 mm	8 NSM	Mistral	No	No
Sa'ar 5	76 mm	8 Harpoon or Gabriel	64 Barak	MK 46	H-665A or SH-2F or S-76N

<sup>43</sup> UMOE Mandal, "The Skjold Class Fast Reaction Craft," 2000, <<http://www.foils.org/skjold%20brief.pdf>> (12 December 2003).

<sup>44</sup> Israeli Weapons.com, "Eilat Class Saar 5 multi-mission corvettes," <<http://www.israeli-weapons.com/weapons/naval/saar5/Saar5.html>> (12 December 2003).

*Procure more Arleigh Burke Class destroyers:*

Procuring additional Arleigh Burke class destroyers is another option to support the Sea Power 21 naval strategy by employing Arleigh Burke class destroyers in a Littoral Combat Ship role. These warships are designed for anti-surface warfare (ASuW), anti-submarine warfare (ASW), mine countermeasures, and other missions which all support the Sea Power 21 naval strategy. Their characteristics include:

	Length (ft)	Beam (ft)	Draft (ft)	Displacement (tons)	Speed (knots)	Range (nautical miles)	Crew	Cost (U.S. Dollars)
Arleigh Burke's	505	66	31	8400-9200	+30	4400	340	1.2 billion

These vessels have capabilities that are suited for defeating the small surface combatant, and anti-submarine threat in littoral regions where their much larger draft will not limit their effectiveness. Beginning with *USS Pinckney* (DDG 91), Arleigh Burke destroyers will have a minehunting capability as they begin to be equipped with the Remote Minehunting System (RMS) AN/WLD-1(V)1.<sup>45</sup> Their capabilities include:

	Gun	Surface to Surface Missile	Surface to Air Missile	Torpedoes	Helicopter
Arleigh Burke	5 in	8 Harpoon	Standard Missile	Mk 46 or MK 50	SH-60

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<sup>45</sup> Naval Sea Systems, "Remote Minehunting Systems (RMS), AN/WLD-1(V)1," <<http://www.navsea.navy.mil/rms/>> (18 March 2004).

*Procure a new Littoral Combat Ship:*

The last option available is to procure a newly designed Littoral Combat Ship with the specifications called for by the U.S. Navy in the PD-IRD.<sup>46</sup> These warships are being designed to deal with specific threats in the littorals that are addressed by the Sea Power 21 naval strategy. Their characteristics include:

	Length (ft)	Beam (ft)	Draft (ft)	Displacement (tons)	Speed (knots)	Range (nautical miles)	Crew	Cost (U.S. Dollars)
LCS	Unknown	Unknown	10-20	75-210	50	4300	15-75	250 million

The capabilities for these warships have not been determined, although the requirements call for a mission kill capability against small surface crafts, submarines, and the ability to conduct mine warfare operations in the littorals. Their capabilities include:

	Gun	Surface to Surface Missile	Surface to Air Missile	Torpedoes	Helicopter
LCS	Unknown	Unknown	Unknown	Unknown	MH-60

### **III. Analysis**

To counter regional and transnational threats the Sea Power 21 naval strategy requires an increase in the number of warships in service. The Littoral Combat Ship will fulfill certain naval functions and tasks and offers the ability to increase the total number of warships in service to deal with emerging threats.

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<sup>46</sup> PD-IRD, 2-3.

### *History:*

The U.S. Congress specific role for the Navy is to “promote and defend our national interest.” To accomplish this role, the National Command Authority assigns the Navy specific responsibilities called “functions.”<sup>47</sup> These functions have been shaped by the writings of Mahan, Corbett and many others. Table 1, on the following page, provides six different views of the functions of the U.S. Navy. To accomplish those functions, the Navy needs to perform certain tasks. The Universal Naval Task List, Enclosure 1, provides a listing of all the tasks that naval assets may perform.

As maritime threats changed, the U.S. Navy has re-evaluated which functions and tasks it emphasizes. During Jefferson’s presidency, small gunboats were required for coastal sea control to deny an enemy entrance into large waterways such as the Hudson River. As American interests grew, the Navy needed to enforce the respect of U.S. interests abroad. To accomplish this, the Navy required larger warships capable of operating far from American coasts. During the Tripolitan War, the Navy found that it not only needed larger warships but that it also required smaller warships like the gunboats to operate where larger and greater draft warships could not.

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<sup>47</sup> Naval Doctrine Publication 1 – Naval Warfare (NDP 1), Department of the Navy, March 28, 1994, Chapter 2, page 1.